

**PUBLIC REDACTED**

# **Exhibit**

# **14**

1 UNITED STATES DISTRICT COURT  
2 NORTHERN DISTRICT OF CALIFORNIA  
3 SAN FRANCISCO DIVISION

4 -----X  
5 IN RE GOOGLE PLAY STORE  
6 ANTITRUST LITIGATION  
7 Case No. 3:21-md-02981-JD

8 THIS DOCUMENT RELATES TO:  
9 Epic Games Inc. v. Google LLC, et al.,  
10 Case No. 3:20-cv-05671-JD

11 In Re Google Play Consumer  
12 Antitrust Litigation  
13 Case No. 3:20-cv-05671-JD

14 In Re Google Play Developer  
15 Antitrust Litigation,  
16 Case No: 3:20-cv-05792-JD

17 State of Utah, et al., v.  
18 Google LLC, et al.,  
19 Case No: 3:21-cv-05227-JD

20 -----X

21 VIDEOTAPE DEPOSITION  
22 HAL SINGER, PH.D.  
23 Thursday, May 12, 2022  
24 9:07 a.m. (EST)

25 Reported by:  
Ryan K. Black, RPR, CLR, Notary Public

1 being reflected in the prices of apps in the  
2 transaction data.

3 Q. Right. And your opinion is that  
4 Google's service fees, to the extent that they  
5 are supercompetitive, is equivalent to an  
6 increase in the developer's marginal cost.

7 A. It can be understood that way, yes.

8 Q. Right. And in your report, you've  
9 modeled the proper economic way to calculate how  
10 a profit-maximizing developer would set prices  
11 based on marginal costs.

12 A. I have. And --

13 Q. Right.

14 A. -- and, as you know, it depends on  
15 the -- the nature of the demand and the demand  
16 specification that you assume, right? Each  
17 demand specification you assume is going to apply  
18 at different pass-through rates.

19 Q. Right. So could you go to Page 104 of  
20 your report, your opening report, please?

21 A. Sure.

22 Q. And you'll see this is a continuation of  
23 the Paragraph 225 from the previous page.

24 And you've got a formula there that has  
25 "P minus C star divided by P equals one divided

1 by E sub D."

2 Do you see that?

3 A. Yes. That's the classic Lerner markup.

4 Q. Right. So that's -- that's the proper  
5 economic model for how a profit maximizing  
6 developer would set prices based on marginal  
7 costs, right?

8 A. That model describes the markup over  
9 marginal cost as the function of the elasticity  
10 of demand faced by the developer.

11 Q. Right. And -- and this model on Page  
12 104 of your opening report, that -- that's --

13 A. So --

14 Q. -- the correct economic mod -- economic  
15 way to model how the change in marginal costs  
16 will affect the price that the developer charges.

17 A. It's the -- it's the way to think  
18 about it at -- at a very, very high level of  
19 abstraction. But, as you know, to actually  
20 estimate the pass-through rate here, I have to  
21 make an assumption about the demands curve and --  
22 and -- and the precise nature of demand that a --  
23 the developer faces, right?

24 Once you --

25 Q. Understood.

1           A.     -- make a -- once you make that  
2     decision, you get these pass-through rules,  
3     right? And the pass-through rules -- whether you  
4     go linear or logit or -- or constant elasticity  
5     -- are going to express pass-through as a  
6     function of things that do not include the  
7     marginal cost.

8           Q.     Understood. But this formula on Page  
9     104 of your report is the correct economic way to  
10    model the relationship between the developer's  
11    price and the marginal cost in general?

12          A.     Well, I just want to put that caveat in  
13    there. It's the -- it's the -- definitely the  
14    way to think about it and why it's in my  
15    preamble, right?

16                 But when I go to model the precise  
17    amount of pass-through, I have to make an  
18    assumption about what kind of demand the  
19    developer faces, right? And that -- that puts  
20    me to a -- takes me to a pass-through rule that  
21    isn't necessarily going to be denominated in  
22    terms of costs.

23          Q.     Understood. So -- but -- but this mod  
24    -- this economic model you've described in Page  
25    104 of your report, that's generally accepted in

1 economics.

2 A. Yes.

3 Q. Now, if you just look at the cost term  
4 there, C star, and the -- the C star in that  
5 formula that you have on Page 104 of your report  
6 is equal to C divided by one minus T, right?

7 A. Correct.

8 Q. And -- and in that -- in that cost term  
9 I just described, T is the service fee rate?

10 A. Correct.

11 Q. And C is the developer's per-unit  
12 marginal cost other than the service fee?

13 A. Correct. Processing and the like, yes.  
14 Any other --

15 Q. Okay.

16 A. Any other types of marginal costs.

17 Q. Okay. And so one input into the  
18 generally accepted economic model of how the  
19 profit-maximizing developer would set pri --  
20 prices is the marginal costs other than the  
21 service fee.

22 A. For short-run profit maximization, the  
23 answer is, yes, that this model, at this high  
24 level of ab -- of abstraction, is a function of  
25 the marginal cost.

1 Q. Right. And in terms of how the price is  
2 a function of mar -- of --of -- of marginal cost,  
3 the -- the -- the formula you've got here on Page  
4 104, in that formula, the effect of a change in  
5 the service fee -- let me -- let me put it  
6 differently.

7 The formula you've got on Page 104, the  
8 effect on prices will be -- as a result of a  
9 change in the service fee will be proportional to  
10 the marginal costs other than the service fee.

11 A. In -- for short-run profit maximization,  
12 yes. For -- for long-run profit maximization,  
13 this is not -- this is not the -- the way that  
14 you'd get to the effect on price.

15 Q. Okay. Now, -- so let me just ask,  
16 looking at this cost term here, C -- C star, if C  
17 in that formula, which is the marginal cost other  
18 than the service fee, if that's zero, then the  
19 service fee rate will not have any effect on the  
20 ultimate price charged according to this model,  
21 correct?

22 A. Let me just say this: It -- it's --  
23 it's never zero in the real world. But -- but if  
24 you want me to ask -- answer the hypothetical,  
25 counterfactually, if we had -- if we had a zero

1 marginal cost, then by this model, and this model  
2 alone, then in the short run, prices would not  
3 adjust to the take rate.

4 As I explain in my report, there's all  
5 sorts of reasons why we would still, even in that  
6 extreme and counterfactual assumption, would  
7 expect prices to change with the change in the  
8 take rate, including from steering, including  
9 from having to cover all costs in the long  
10 run, --

11 Q. Okay.

12 A. -- including from sticky prices.

13 Q. Okay. Now, let me just ask again,  
14 hypothetically, if that term C, which are the  
15 marginal costs other than the service fee rate  
16 in your formula on Page 104, if that term is  
17 negative, then a reduction in the service fee  
18 rate will actually lead to an increase in the  
19 price that the developer would charge.

20 A. I haven't done that one yet, but I  
21 think you've got the -- the sign correct. If you  
22 multiply, in that example, 1.43 by a negative  
23 cost, I think that there -- there would be a  
24 negative relationship in the short run for this  
25 equation.



1 they would land on Microsoft's productivity  
2 package would be higher than if they were to land  
3 on some obscure package within productivity apps.  
4 I mean, it's -- it's very intuitive. It's very  
5 natural.

6 Q. Now, your pass-through formula is based  
7 on logit demand.

8 A. Yes.

9 Q. And one feature of logit demand is that  
10 all goods in the market where demand is being  
11 measured are substitutes.

12 A. I think that's a general -- that is  
13 generally the case. That's fine.

14 Q. Okay. Is it your opinion that all apps  
15 in each Google Play app category are substitutes?

16 A. No. And that's why I invoked this  
17 concept of cluster markets. Like, you could --  
18 you could take Microsoft's Excel and Microsoft's  
19 Word and ask me if they're substitutes, and I  
20 would say at -- at that level, they're not.  
21 But -- but when you think about the fact that  
22 Microsoft and Google are actually competing with  
23 a package of productivity apps, that -- that it  
24 would make sense to think of that as something  
25 more akin to a cluster market the way that we saw

1 in the Staples and Office Depot case, that paper  
2 clips and a ruler aren't necessarily substitutes;  
3 but if the people generally tend to buy those  
4 things from the same place, they can belong in  
5 the same product market.

6 Q. So -- but -- but it's not your opinion  
7 that all apps in each Google Play app category  
8 are substitutes.

9 A. I just gave an example of Excel and Word  
10 as being more -- more of complements, right? But  
11 -- but when you think about the -- the cat -- the  
12 productivity suite that Google is offering, that  
13 -- that's clearly a substitute to what -- what  
14 Microsoft is offering in its productivity suite.

15 Q. Right. So some of the apps in each  
16 Google Play category could be complements,  
17 correct?

18 A. They could be.

19 Q. And some could be substitutes.

20 A. They could be, yes.

21 Q. Right. And you haven't put forth a  
22 model in your report to determine which apps in  
23 each category are complements and which are  
24 substitutes?

25 A. No. And it's not necessary to get the

1 implied pass-through rate.

2 Q. Right.

3 Could you go to Paragraph 78 of your  
4 reply report -- well, actually, let me ask you:  
5 Are you opining that all apps in each category  
6 are part of a cluster market?

7 A. No. You -- you saw in my report. I'm  
8 saying that they don't need to necessarily be a  
9 market, a relevant market, for antitrust  
10 purposes, and I give you a citation for that.

11 I think that if you -- if you really  
12 wanted to -- if you forced it into that box,  
13 which is unnecessary and unnatural, that you  
14 could -- you could get there by -- by  
15 understanding the categories functioning  
16 more like a cluster market.

17 Q. Right. But you're not actually offering  
18 the opinion that all of the apps in each category  
19 are part of a cluster market.

20 A. No. I -- I'm offering the opinion that  
21 -- that everything within the category -- that  
22 the category definitions from Google define the  
23 -- the contours or the arena of competition among  
24 apps in that category.

25 Q. Okay. And, again, let's go to Paragraph

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1           A.     I think the model is. I think that at [REDACTED]  
2     [REDACTED] the economic intuition -- well, this is  
3     the intuition that I'm drawing from the model --  
4     is that when the benefit gets so large, that is  
5     going to spur participation and usage in the  
6     system.

7           Q.     Great.

8                     Your -- your testimony here today, sir,  
9     is that you have a model in your reports that can  
10    tell the Court and the jury in this case which of  
11    the members of the putative class would have  
12    signed up for play points and who would have used  
13    them?

14                    MS. GIULIANELLI: Objection to the form.

15                    THE WITNESS: I didn't say that. I said  
16    that if the but-for subsidy were to rise to [REDACTED]

17    [REDACTED]

18    [REDACTED]

19    [REDACTED]

20    [REDACTED]

21    [REDACTED]

22    BY MR. RAPHAEL:

23           Q.     Okay. So I want to -- I want to be  
24    clear. You have -- your testimony is that in the  
25    but-for world, every member of the putative class

1 would sign up for the play points program and use  
2 their play points?

3 MS. GIULIANELLI: Objection.

4 THE WITNESS: I cannot -- this is the  
5 first time I've been asked that question. I'm  
6 just hearing it afresh, right? I cannot fathom  
7 why a user would say, no, take back -- I was  
8 going to spend [REDACTED] and I realize  
9 you're trying to give me [REDACTED] but, no, I don't  
10 want the [REDACTED] I want to spend the full hundred  
11 myself. It would be crazy -- it would be crazy  
12 to -- to do that.

13 BY MR. RAPHAEL:

14 [REDACTED]  
15 [REDACTED]  
16 [REDACTED]  
17 [REDACTED]  
18 [REDACTED]  
19 [REDACTED]  
20 [REDACTED]  
21 [REDACTED]

22 Q. Right. And so your testimony is that if  
23 Google changed the play points rate that you've  
24 put in your report, that every member of the  
25 putative class would have signed up for the play



1 points program and used play points?

2 MS. GIULIANELLI: Objection.

3 THE WITNESS: I think -- I think it's a  
4 fair assumption. Like, the model certainly is  
5 not calling on this, but I think it's a fair  
6 assumption that once it goes up to [REDACTED] that  
7 -- that everyone who is making purchases would  
8 -- would either redeem it or at least enroll so  
9 as to be able -- to be capable of taking the  
10 subsidy at -- at those terms.

11 BY MR. RAPHAEL:

12 Q. That's an assumption, though, that  
13 you're making. It's not what the model tells  
14 you?

15 A. Well, the model spits out, just to be  
16 clear, what the average subsidy is across all  
17 users.

18 Q. Now, you -- would you agree with me that  
19 the counterfactual experiment lies at the heart  
20 of antitrust analysis?

21 A. Sure. I mean, it's an important thing.  
22 It's -- I don't know if it's at the heart, but  
23 you need -- you need to have a counterfactual.  
24 You need to model the counterfactual.

25 Q. Could you describe for me the